30 Sep 2000

From: Commanding Officer, NRL S&T 510, Houston, TX
To: Commanding Officer, Naval Research Laboratory

Subj: NRL S&T 510 FY 2000 FOURTH QUARTER UNIT REPORT

1. This letter forwards my FY 2000 Fourth Quarter Report, which contains information summarizing the Peacetime Contributory Support (PCS) activities of NRL S&T 510 during the period from 1 July 2000 through 30 September 2000.

2. The report is formatted in MS word with links providing direct access to specific accomplishments from the summary tables. Click on a project name for supporting information. The blue back arrow in your web toolbar provides a return path to the table.

3. Unit member biographies, including contact information, may be found on the web at http://www.onr.navy.mil/reserves/units/st510.

4. AT/ADSW/IDTT Highlights:

a. On 22 and 23 July, conducted a unit IDTT at Rice University, coordinated by LT Len Yowell. Received technical presentations from nine faculty members (including one Nobel Laureate) from the departments of Chemistry and Mechanical Engineering and Material Science. Topics included:

- Carbon nanotube properties, production and applications
- Molecular electronics
- Composites using nanoscale materials
- Materials Characterization Techniques

b. LCDR Pat Jaklitch completed a two-week AT from 24 July to 04 August at the Office of Naval Research, International Field Office, London, UK, where she supported research on the organic mine countermeasures spike. See project description for his accomplishments.

c. LT Len Yowell completed a two-day ADT on 3-4 August at NRL Washington, DC where he coordinated the alumina/nanotube composite research project. Drafted a research proposal: "Synthesis and Characterization of an Alumina/Carbon Nanotube Composite by Extrusion."

d. CAPT Mike Brands completed a 16-day ADSW from 25 August to 9 September with a representative from the Office of Naval Research's Organic Mine Countermeasures Spike Office and the Special Marine Air Ground Task Force in Gulfport, Mississippi during Fleet Battle Experiment Hotel and Millennium Dragon. Evaluated new Internet methods of exchanging MCM information between the landing force commander and the mine warfare commander.

e. LCDR John E. M. Brown completed a 16-day AT from 25 August to 9 September as an observer for the Advanced Sensors Group (Mine Warfare Advanced Concepts Technology Demonstrator) on board the R/V Seward Johnson during Fleet Battle Experiment Hotel. See project description for his accomplishments.

f. LT Mary York completed a two-week AT from 14 – 25 August at the Naval Research Laboratory, Washington, DC working with the Information Systems Security Section (Code 1220). See project description for her accomplishments.

g. CDR RJ Rusnak completed a five-day AT from 10 – 14 July at the Naval Research Laboratory, Stennis Space Center, Mississippi, where he completed board-level testing and bring-up of the timer board he designed for the Acoustic Seafloor Classification Profiler (ASCP) project. He also completed a seven-day AT from 22 – 28 September at the Applied Research Laboratory in Austin, TX, where he assisted in system-level testing and bring-up of the ASCP.

h. CAPT Greg Johnson completed a 11-day AT from 24 August to 03 September supporting Fleet Battle Group Experiment Hotel in Panama City, FL. See project description for his accomplishments.

i. LT Rich Kottke completed a three-day IDTT where he provided support to Naval Warfare Doctrine Command at the final planning conference for Fleet Battle Experiment Hotel in Norfolk, VA. After that, he completed a 12-day AT from 24 August to 04 September and a four-day IDTT from 05 - 08 September supporting Fleet Battle Group Experiment Hotel in Panama City, FL. See project description for his accomplishments.

j. CAPT Robert Trevino, LCDR Pat Jaklitch and LCDR Greg Dulaney each completed three-day IDTTs supporting Fleet Battle Group Experiment Hotel in Panama City, FL, where they assisted in initial set-up and configuration of the temporary operations center.

4. Next month, CAPT Gregory C. Johnson will be relieved as Commanding Officer of NRL S&T 510 by CAPT(sel) Scott Pursley.

/s/ G. C. Johnson

Electronic copy to:
Commanding Officer, N&MCRC, Naval District Washington
Director, S&T Reserve Program (ONR Code 45)
Reserve Program 38 Commanding Officers
NRL S&T 510 Members

I. NRL S&T 510 PEACETIME CONTRIBUTORY SUPPORT

Project Title: Electro-Optical Bathymetry Retrieval Evaluation

Reserve Project Team: LCDR Craig Cobb, NRL S&T 510

Project Customer: Dr. Pete Smith, Oceanography Division, NRL Code 7340

Accomplishments:

Project completed.

Project Title: Remote Sensor Agreement in Ocean-Color Analysis

Reserve Project Team: LT John A. Thomasson, NRL S&T 510

Project Customer: Remote Sensing Branch, Ocean Color Group, NRL Code 7343

Accomplishments:

1) Reviewed Dr. Christine Chan's work and draft paper on relating chlorophyll-a image products between SeaWiFS and MOS satellite sensors.
2) Conducted extensive literature review in ocean optics as a precursor to publishing the work from this project.
3) Applied a new method of comparing Tampa Bay coastal-area images between Landsat and SeaWiFS satellite sensors (the former method used one sample Landsat picture element in comparison with one SeaWiFS picture element; the new method uses the mean of all representative Landsat picture elements, approximately 900, in comparison with one SeaWiFS picture element).
4) Found that there is actually poorer correlation between Landsat and SeaWiFS when using the new method.

Project Title: Chesapeake Bay Outflow Plume Experiment I (COPE I)

Reserve Project Team: LCDR John E. M. Brown, NRL S&T 510

Project Customer: Dr. Bob Arnone, Multi-spectral Sensing and Applications division, NRL Code 7343

Accomplishments:

No activity this quarter.

Project Title: **Array for Real-time Geostrophic Oceanography (ARGO)**

Reserve Project Team: LCDR Silvia J. Murphy, NRL S&T 510

Project Customer: Dr. Harley Hurlburt, NRL Stennis

Additional Information: http://news.bbc.co.uk/hi/english/sci/tech/newsid_692000/692647.stm

Accomplishments:

1) Sub-sampled sea surface height and sea surface temperature data in three geographical regions: Kuroshio, Agulhas retroflection and the Arabian Sea. This is the control data, used as truth.
2) Used the buoy locations for each of the seven simulations (at the end of each of five years) to pull out points from the above sub-regional data sets.
3) Interpolated this data using natural neighbor and inverse distance weighted averaging.
4) Took the difference between the original fields and the interpolated fields and created plots of six-panels showing the results for each simulation.
5) Continued improving the plots of the interpolation studies by adding an overlay of buoy locations.
6) FTPed 270 plots to my NRL machine and notified Dr. Hurlburt of their existence. He plotted out several and we discussed their significance via e-mail.
7) The project may be complete. The results will be published in a paper or on a web site.

Project Title: **Laser Testing of Night Vision Devices**

Reserve Project Team: LT Jerri Tribble, NRL S&T 510

Project Customer: Steve Walker, NRL Washington Code 6336

Accomplishments:

Project completed.

Project Title: **Geospatial Information DataBase (GIDB)**

Reserve Project Team: LCDR Craig M. Cobb, NRL S&T 510

Project Customer: Kevin Shaw, NRL Stennis, Code 7440.2 (Mapping Charting and Geodesy)

Accomplishments:

Project Title: **TechOASIS**

Reserve Project Team: LCDR Patricia Jaklitch, NRL S&T 510

Project Customer: CAPT Ryan, London IFO

Accomplishments:

1) Installed and took the Dialog tutorial.
2) Downloaded 25 MB of datasets produced by other members of the project team.
3) Conducted dialog searches on numerous topics for the organic mine countermeasures spike. Sifted out papers in the MCM area published by non-US authors and affiliations.
4) Downloaded over 6000 datasets for use in the TechOASIS software application.
5) Analyzed the datasets using TechOASIS co-matrix and principal component decomposition functions.
6) Provided results showing what countries/authors were most active in the area of MCM and also where the research trends correlated. The information will be used by ONR-IFO staff to plan two major MCM conferences to be held in the Far East in FY-01.

Project Title: **Northern Gulf of Mexico Littoral Initiative (NGLI)**

Reserve Project Team: LCDR Craig M. Cobb, NRL S&T 510

Project Customer: Naval Oceanographic Office (Scientific Technology Staff, Code OTT)

Chief Scientist: Carl Szczechowski

Accomplishments:

1) Met with project lead and contractor to discuss software status.
2) Began familiarization with new code.
3) Obtained system accounts for direct access.

Project Title: **Regional Naval Science Awards Program Support**

Reserve Project Team: CAPT Robert C. Trevino, NRL S&T 510

Project Customer: Bruce Thompson, Public Affairs Division, ONR Code 353

Accomplishments:

No activity this quarter.

Project Title: **Acoustic Seafloor Classification Profiler (ASCP)**

Reserve Project Team: CDR RJ Rusnak, NRL S&T 510

Project Customer: Dale Bibee, NRL Stennis, Code 7430

Accomplishments:

1) Successfully completed board-level bring-up and testing of the ASCP timer board, designed by CDR Rusnak.
2) Assisted in system-level bring-up and testing of the ASCP project.

II. NAVAL RESERVE ACTIVE DUTY SUPPORT TO NRL WASHINGTON, D.C.

Project Title: NASA/NRL Interim Control Module (ICM) Program

Reserve Project Team: CAPT Gregory C. Johnson, NRL S&T 510

Project Customer: Mr. Al Jacoby, NRL Space Transportation Directorate

Accomplishments:

No activity this quarter.

Project Title: Thruster Engine Characteristics for the Dynamic Motion Simulation

Reserve Project Team: LT Andy Hamilton, NRL S&T 510

Project Customer: Sam Hollander, NRL Washington D.C. (Code 8230). Robotics Engineering and Controls Laboratory of the Spacecraft Engineering Department for the Naval Center for Space Technology

Accomplishments:

No activity this quarter.

Project Title: ZERON 100 Crevice Corrosion

Reserve Project Team: LCDR Greg Dulaney, NRL S&T 510

Project Customer: Keith Lucas, NRL Washington

Accomplishments:

No activity this quarter.

Project Title: Materials Laboratory Support

Reserve Project Team: LCDR Jerri Tribble, NRL S&T 510

Project Customer: Steve Walker, NRL Washington, code 6336

Accomplishments:

Project completed.

Project Title: Deep Sea Corrosion Research

Reserve Project Team: CDR AJ Murphy, NRL S&T 510

Project Customer: NRL Code 6136

Accomplishments:

No activity this quarter.

Project Title: Gell Formation in Military Aviation Turbine Fuel

Reserve Project Team: CDR George Spencer, NRL S&T 510

Project Customer: Dr. Dennis Hardy, NRL Washington, code 6121

Accomplishments:

Project completed.

Project Title: Security Support

Reserve Project Team: LT Mary York, NRL S&T 510

Project Customer: Information Systems Security Section, NRL Washington, Code 1220

Accomplishments:

1) Updated NRL's information security instructions. Reviewed NRL's information system security and provided guidance on conformance with various DoD and Naval Information System Security instructions. Information system security is critical to ensure the security of NRL's vast scientific and technical data through classified and unclassified networks encompassing 7000 computers nationwide.
2) Consolidated input from subject matter experts to develop a detailed flowchart of NRL's information system life cycle from acquisition to disposal. The flowchart provided invaluable documentation for NRL personnel of the various information system processes.
3) Investigated possible computer security violations.

III. NON-NSAP/NRL PROJECT SUPPORT

Project Title: **Laser Eye Exposure Susceptibility Analysis**

Reserve Project Team: LCDR Jerri A. Tribble, NRL S&T 510

Project Customer: Dr. Norm Barsalou and Dr. Sean Biggerstaff, Naval Health Research Center Detachment Brooks AFB

Accomplishments:

Project completed.

Project Title: **Fleet Battle Experiment Hotel (FBE-H)**

Reserve Project Team: CAPT Mike Brands, CAPT Greg Johnson, CAPT Robert Trevino, LCDR John Brown, LCDR Greg Dulaney, LCDR Pat Jaklitch, LT Rich Kottke, NRL S&T 510

Project Customer: ONR Program 32MW

Accomplishments:

1) CAPT Brands evaluated new Internet methods of exchanging MCM information between the landing force commander and the mine warfare commander.
2) CAPT Johnson stood watches in the temporary operations center in Panama City and acted as a reserve liaison coordinator/senior watch officer. As operations watchstander, provided command and control, information gathering and display and decision for all program 32MW experiment activities at Panama City.
3) CAPT Johnson assisted Program 32 scientists and experimenters by providing a fleet perspective, drawing on his test and evaluation experience.
4) CAPT Johnson coordinated reserve support for the operations center, keeping a 24-hour watch rotation for a significant portion of the FBE-H.
5) LCDR John Brown provided 16 days of support to the Advanced Sensors Project onboard Research Vessel Seward Johnson. Observed all aspects of FBE-H, working side-by-side with the scientists. Sent daily data collection reports back to the operations center. Assisted in evaluation of the different sensors' performance.
6) LT Kottke stood watches in the temporary operations center in Panama City. As operations watchstander, provided command and control, information gathering and display and decision for all program 32MW experiment activities at Panama City.

7) LT Kottke liaisoned between Naval Warfare Development Command (NWDC) and the program 32 experimenters. Assisted program 32 scientists and experimenters by providing a fleet perspective, drawing on his surface warfare and mine countermeasures experience. Provided direct support to NWDC through data collection, analysis and entry. Obtained crucial input on over forty Questions of Interest for FBE-H, collecting inputs from ONR Program 32, MCM Squadron Two and reserve support personnel.

8) CAPT Robert Trevino, LCDR Pat Jacklitch and LCDR Greg Dulaney assisted in initial set-up and configuration of the temporary operations center in Panama City, FL.